New York State
Severe Weather Awareness Week
April 30th to May 6th, 2017

Severe Thunderstorms

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NOAA's National Weather Service

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Severe Thunderstorms

A storm which produces hail 1 inch in diameter or larger and/or wind gusts 58 mph or stronger.

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Severe Thunderstorms Characteristics

- Persistent – long lasting
- Strong updrafts & downdrafts
- Large hail
- Strong winds
- A rotating storm
- Well organized

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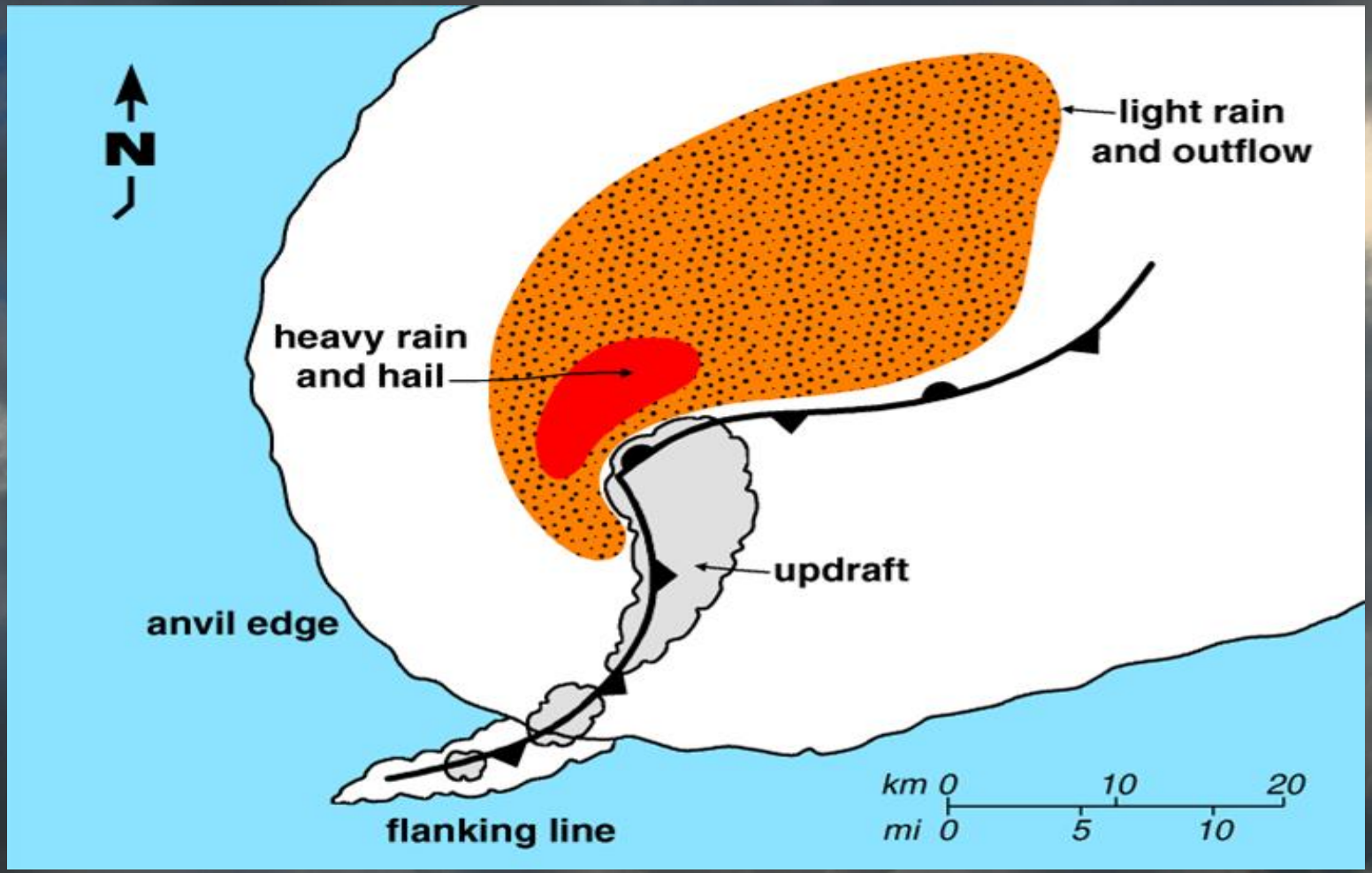
Severe Thunderstorm Structure



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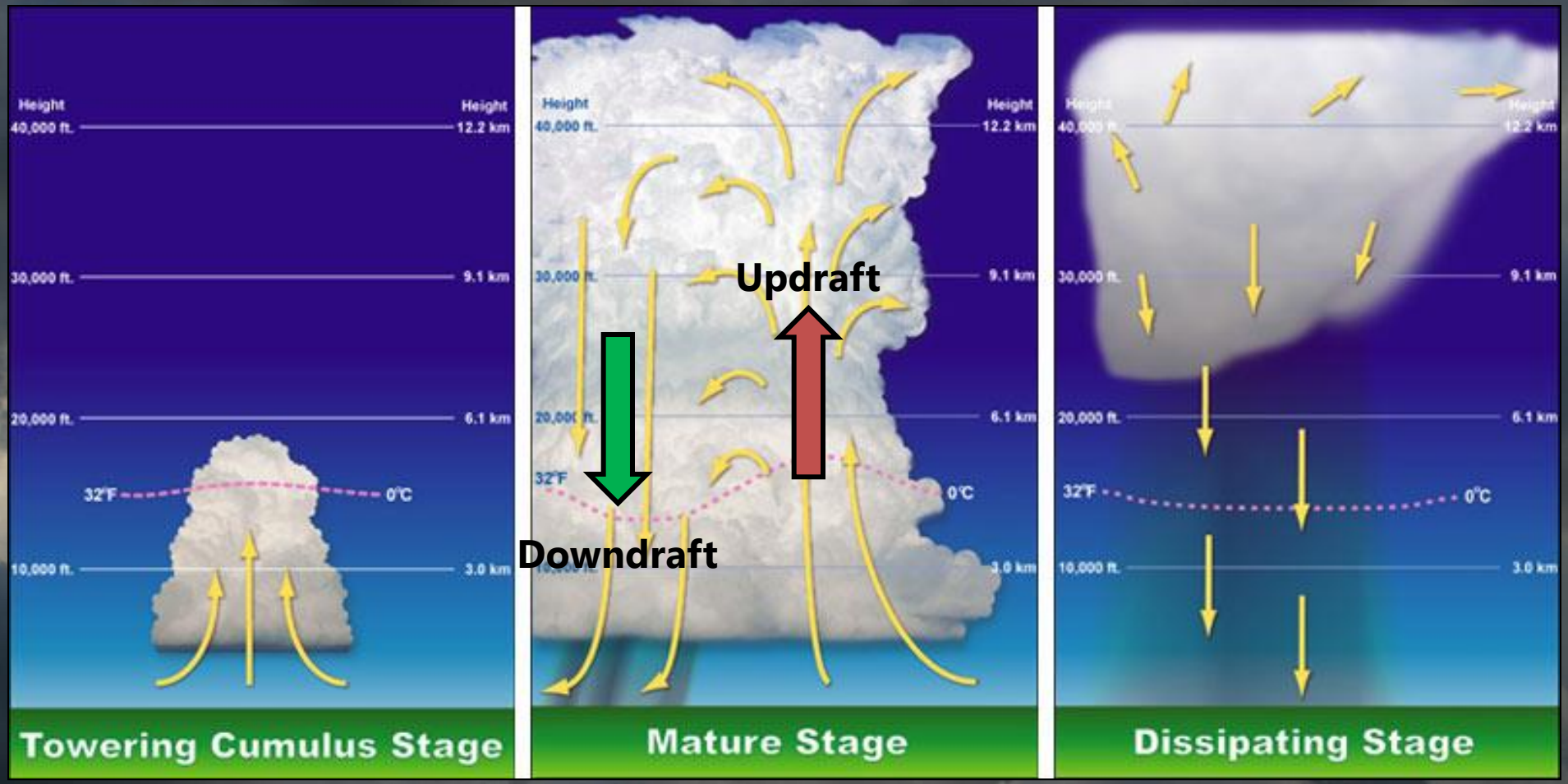
A Life Cycle of a Basic Thunderstorm



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Types of Thunderstorms

Single Cell	Multicell Cluster	Multicell Line	Supercell
Weak Updraft (non-severe or Can be severe) Slight Threat	Moderate Updraft (non-severe or Can be severe) Moderate Threat	Moderate Updraft (non-severe or Can be severe) Moderate Threat	Intense Updraft (Always severe) Mesocyclone – Rotating Updraft High Threat
			

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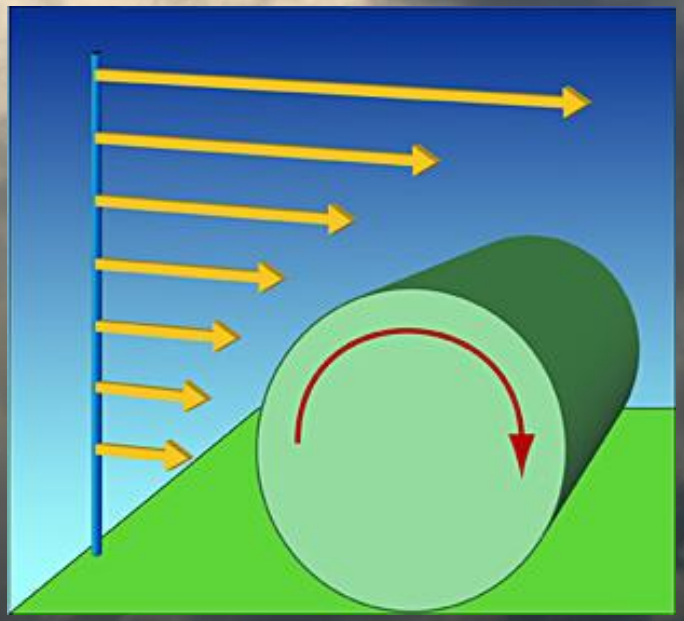
Thunderstorms
VS.
Severe Thunderstorm?
WIND SHEAR

Change of wind speed and direction with height



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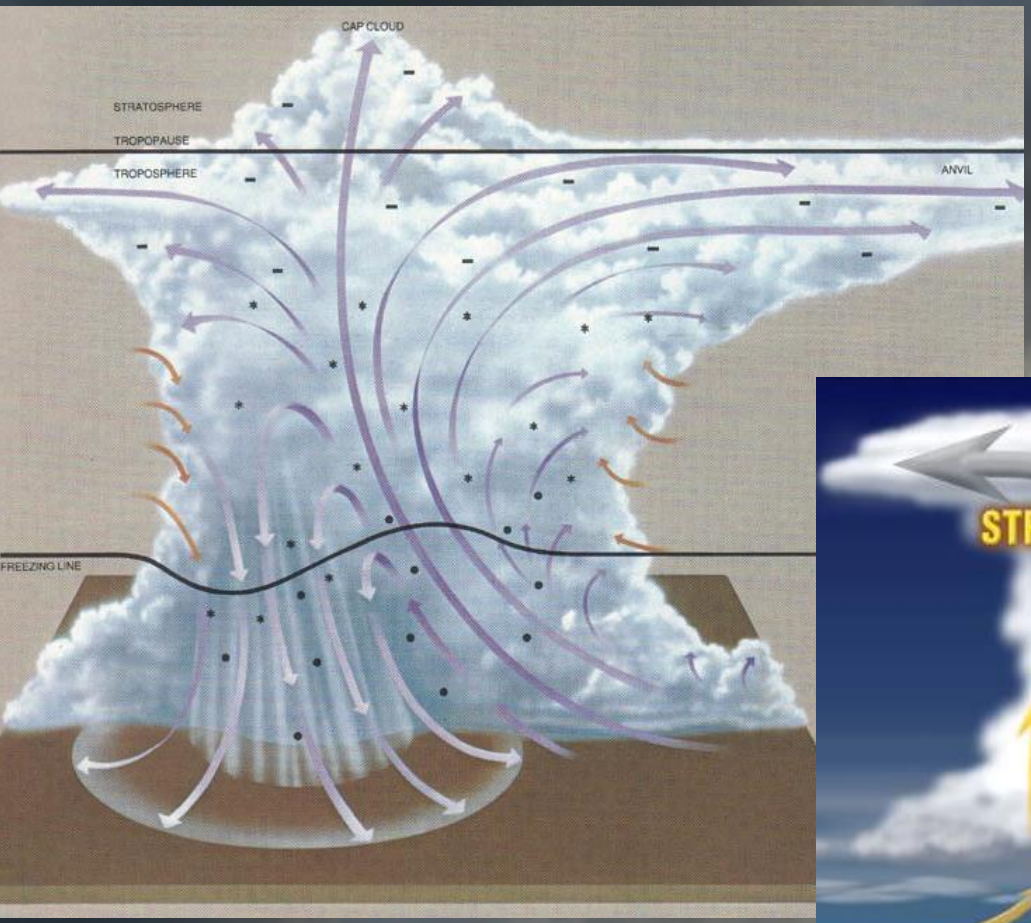
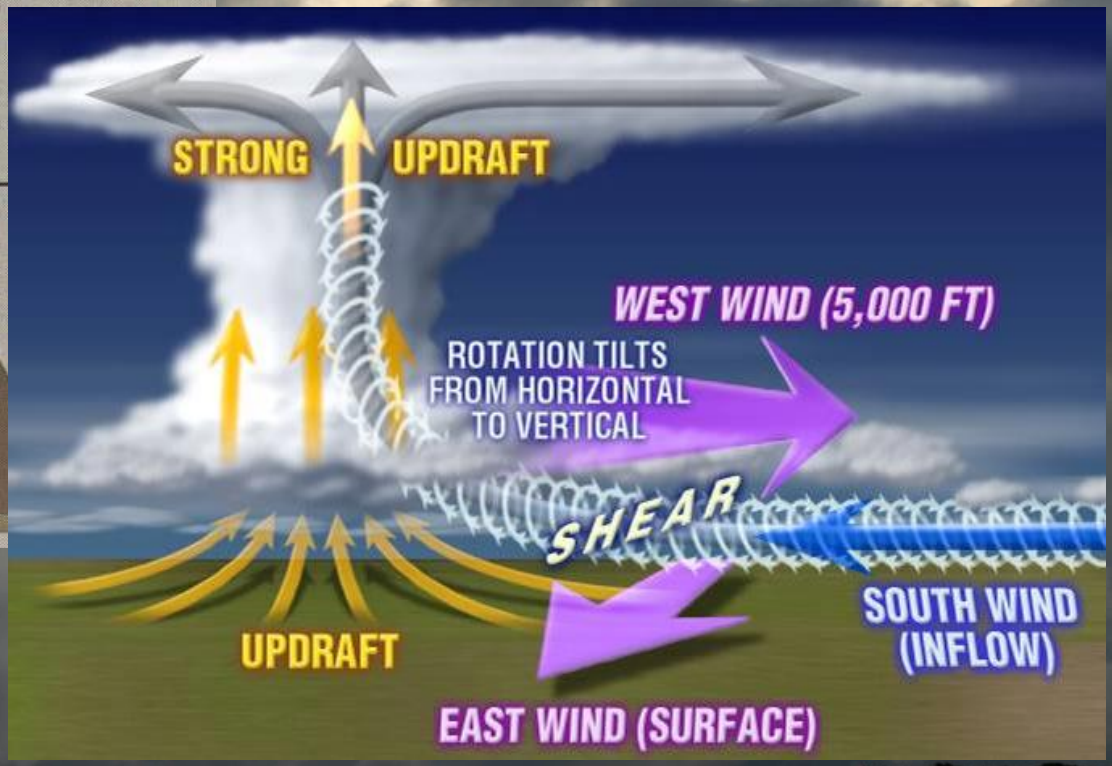
Why Does Shear Matter in Thunderstorms



Wind shear creates violent and long lived thunderstorms.



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Severe Thunderstorms Produce Damaging Winds

- Thunderstorm winds 58 mph or stronger may cause structural damage to buildings. Stronger winds can cause trees to uproot.
- Severe thunderstorms create life threatening conditions for recreational boaters.

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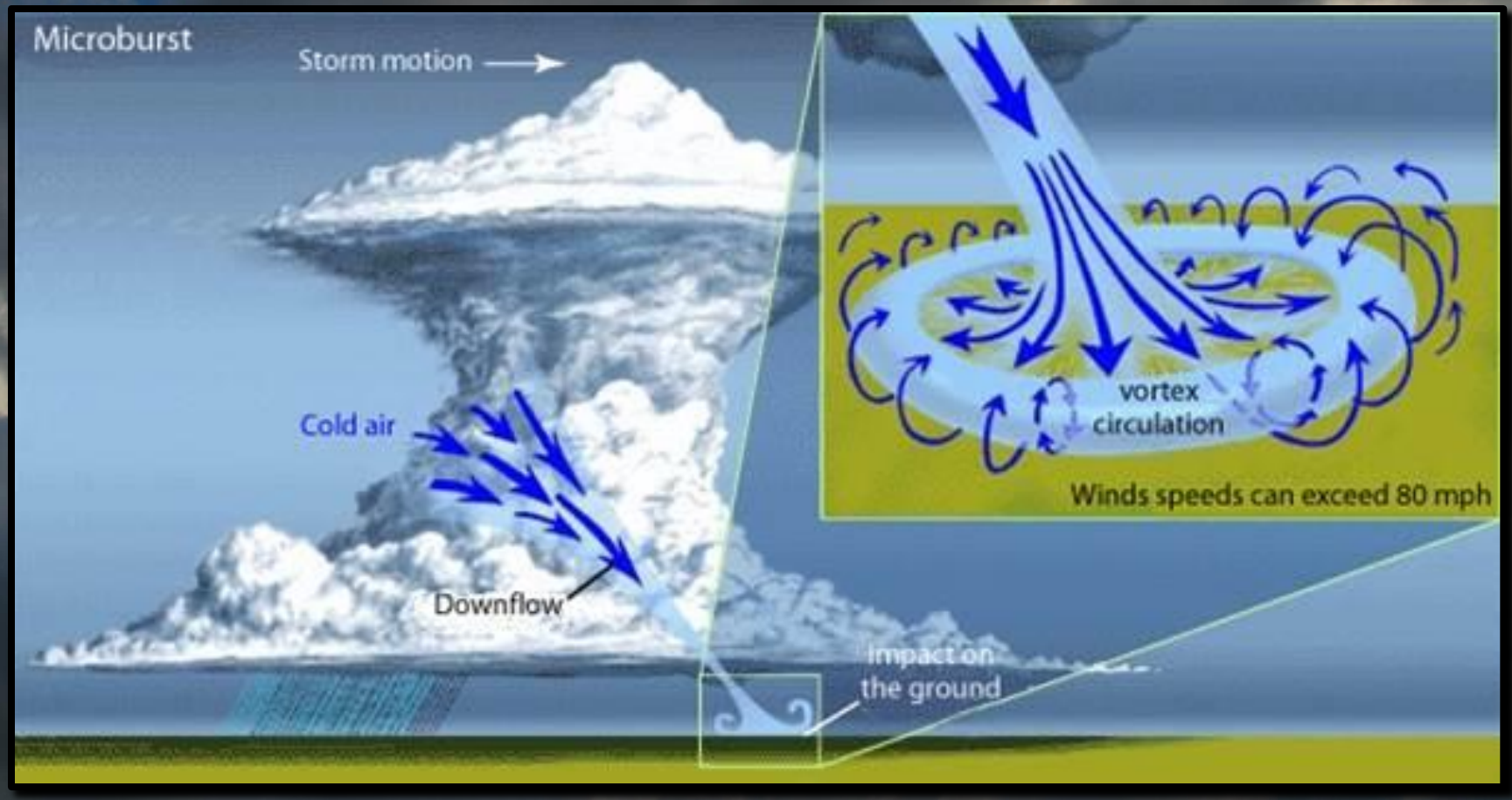
Severe Thunderstorms Can Produce Downbursts

A powerful downward movement of air (a downdraft) in a severe thunderstorm. Winds can be as strong as 80 to 100 mph.



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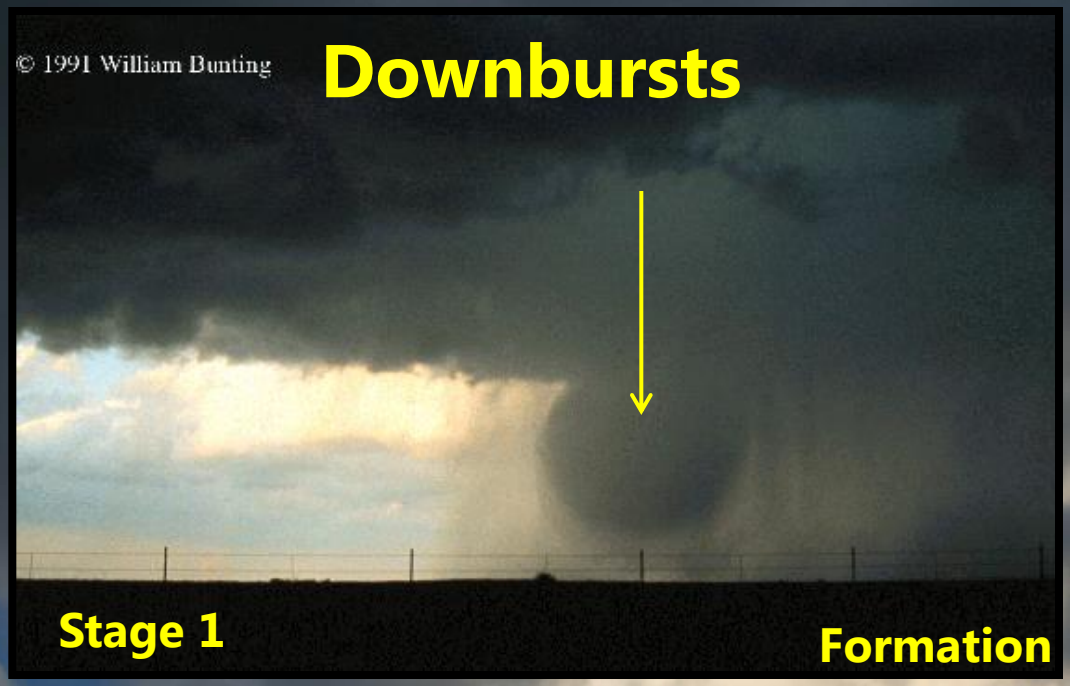
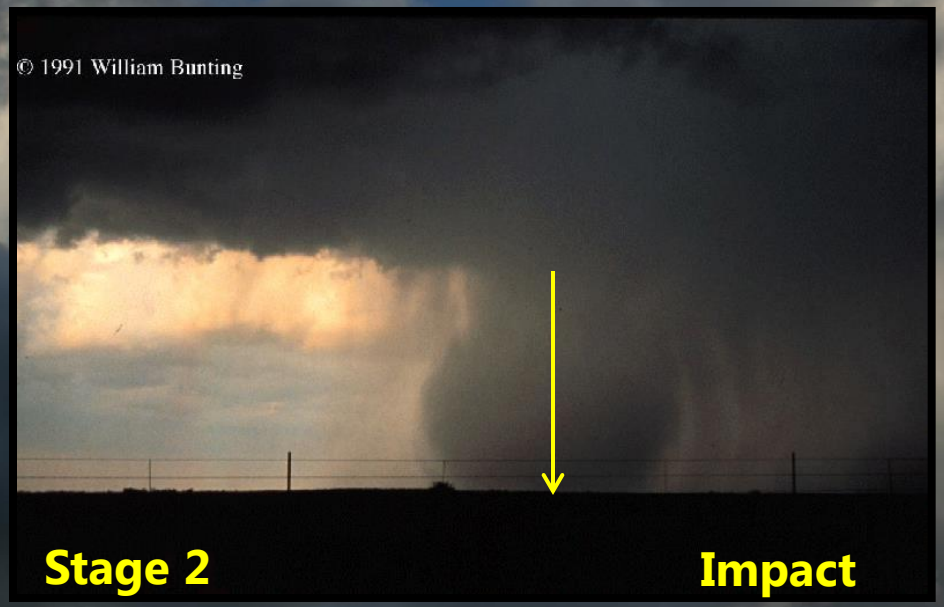
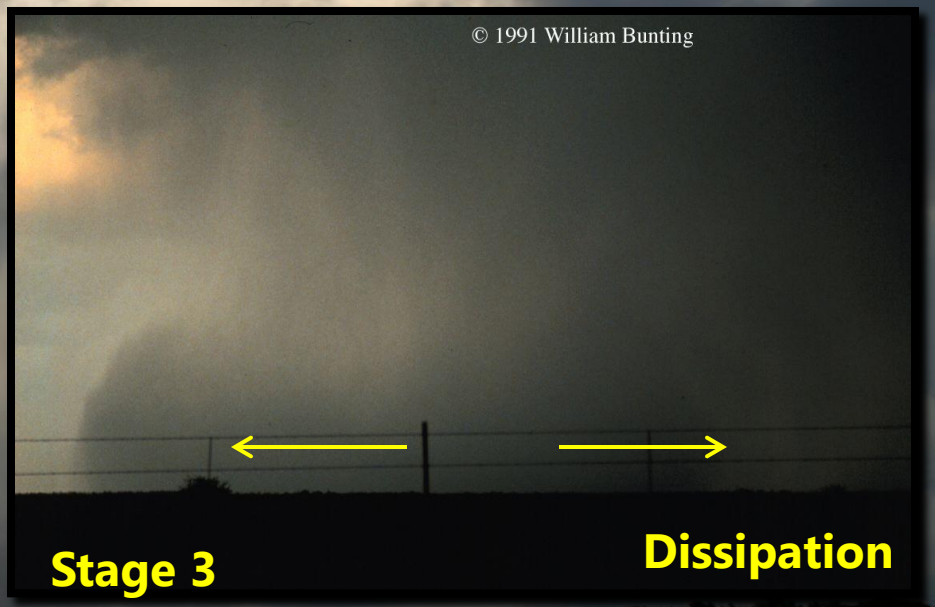
Downbursts







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Pictures taken in central Oklahoma 10-24-91 by Bill Bunting

Downburst/Microburst Damage Spreads Outwards

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Severe Thunderstorms Can Produce Large Hail

Hail causes billions of dollars in damages to crops and properties each year.

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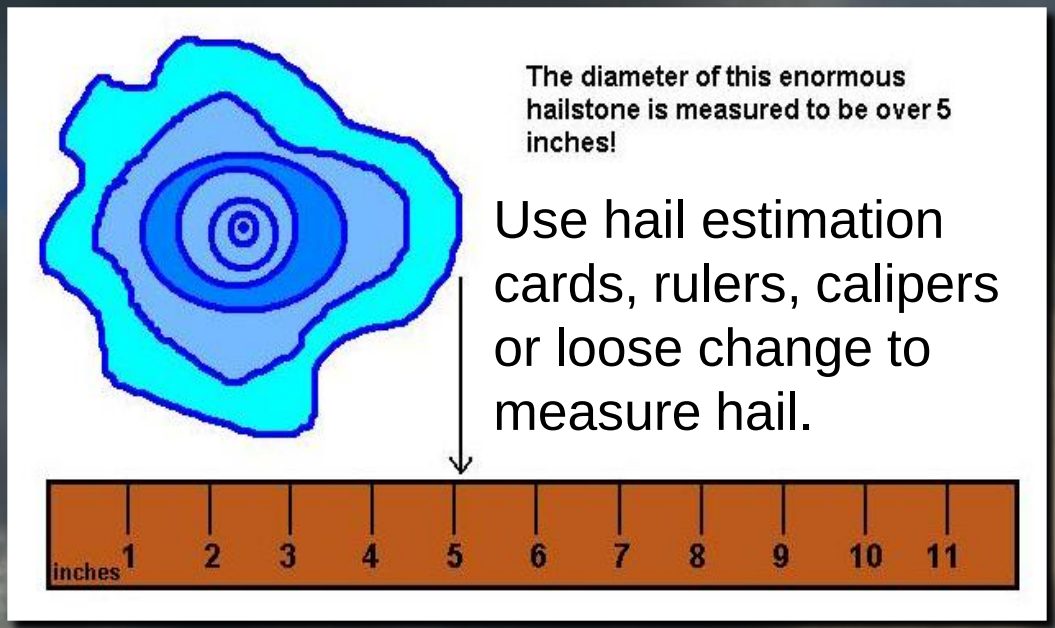
Hail Size



Hail Diameter Size	Description
1/4"	Pea
1/2"	Plain M&M
3/4"	Penny
7/8"	Nickel
1" (severe)	Quarter
1 1/4"	Half Dollar
1 1/2"	Walnut/Ping Pong Ball
1 3/4"	Golf Ball
2"	Hen Egg/Lime
2 1/2"	Tennis Ball
2 3/4"	Baseball
3"	Teacup/Large Apple
4"	Grapefruit
4 1/2"	Softball
4 3/4"- 5"	Computer CD-DVD

Hail comes in many shapes and sizes. Hail can be as small as peas and as large as a computer CD-DVD. Giant hail is extremely rare and usually found in the great plains.

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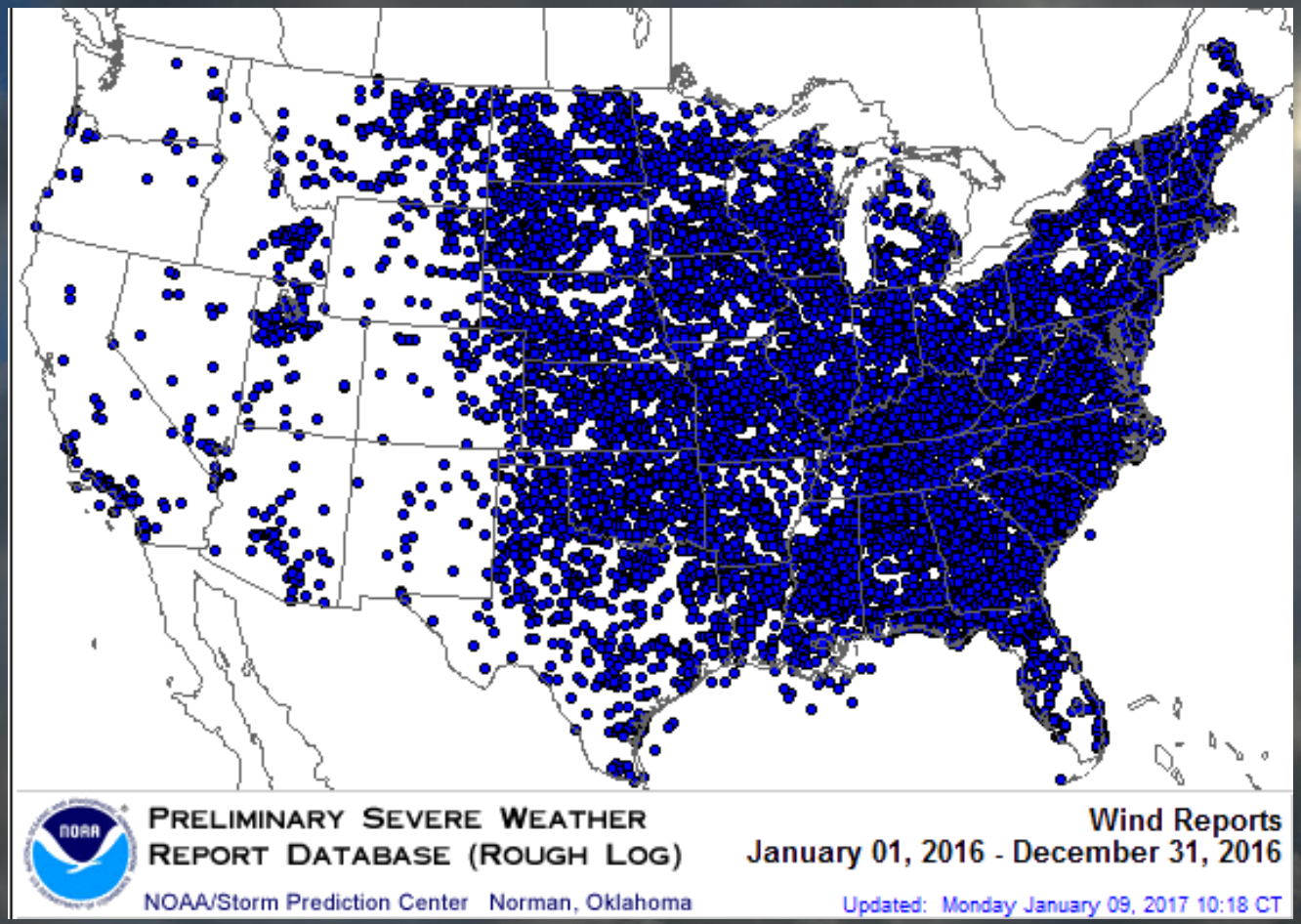
Preliminary Severe Wind Reports in 2016

Where in the US did thunderstorms cause severe thunderstorm damage?



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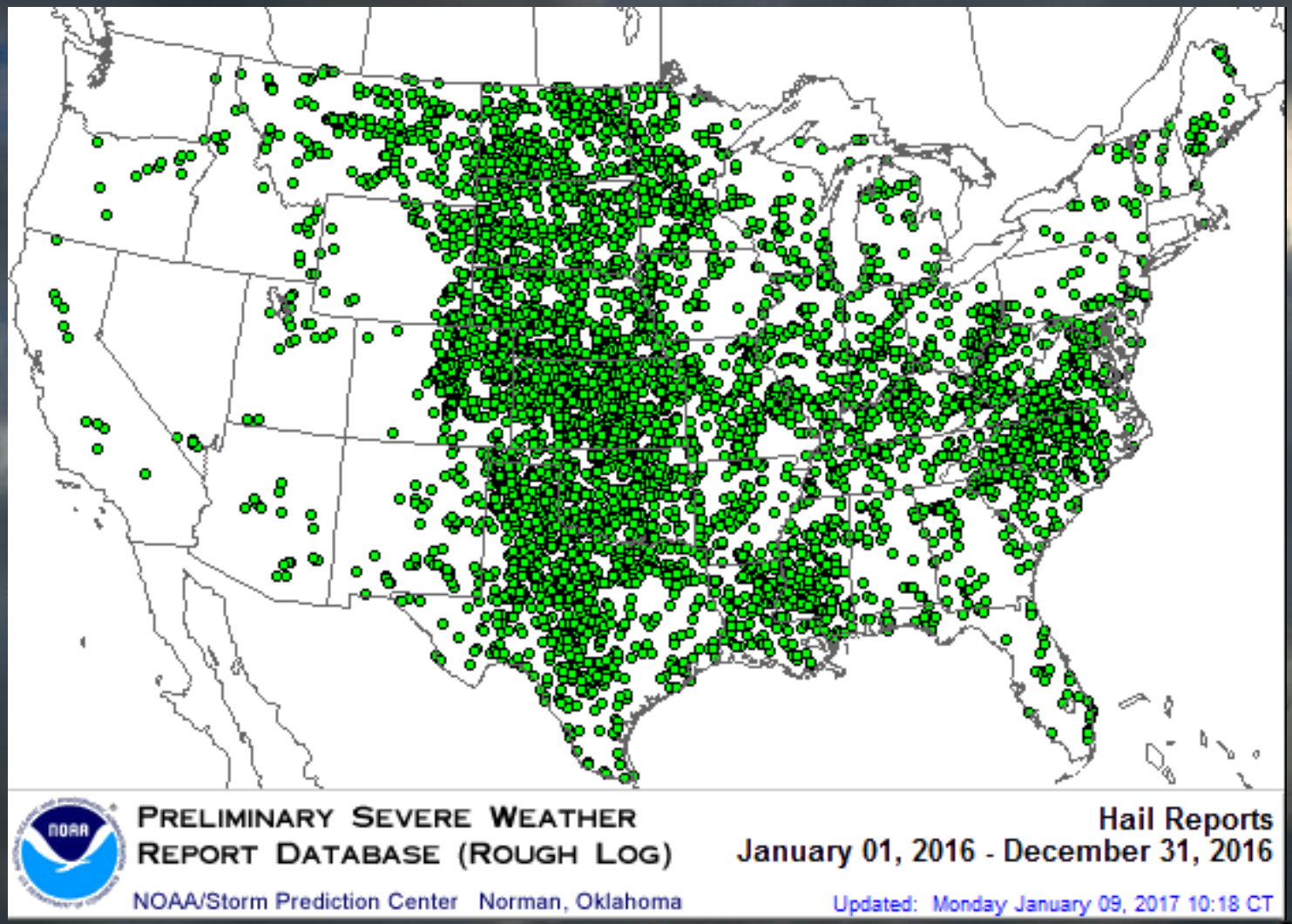
Preliminary Severe Hail Reports in 2016

Where in the US did thunderstorms cause hail larger than 1 inch in diameter?



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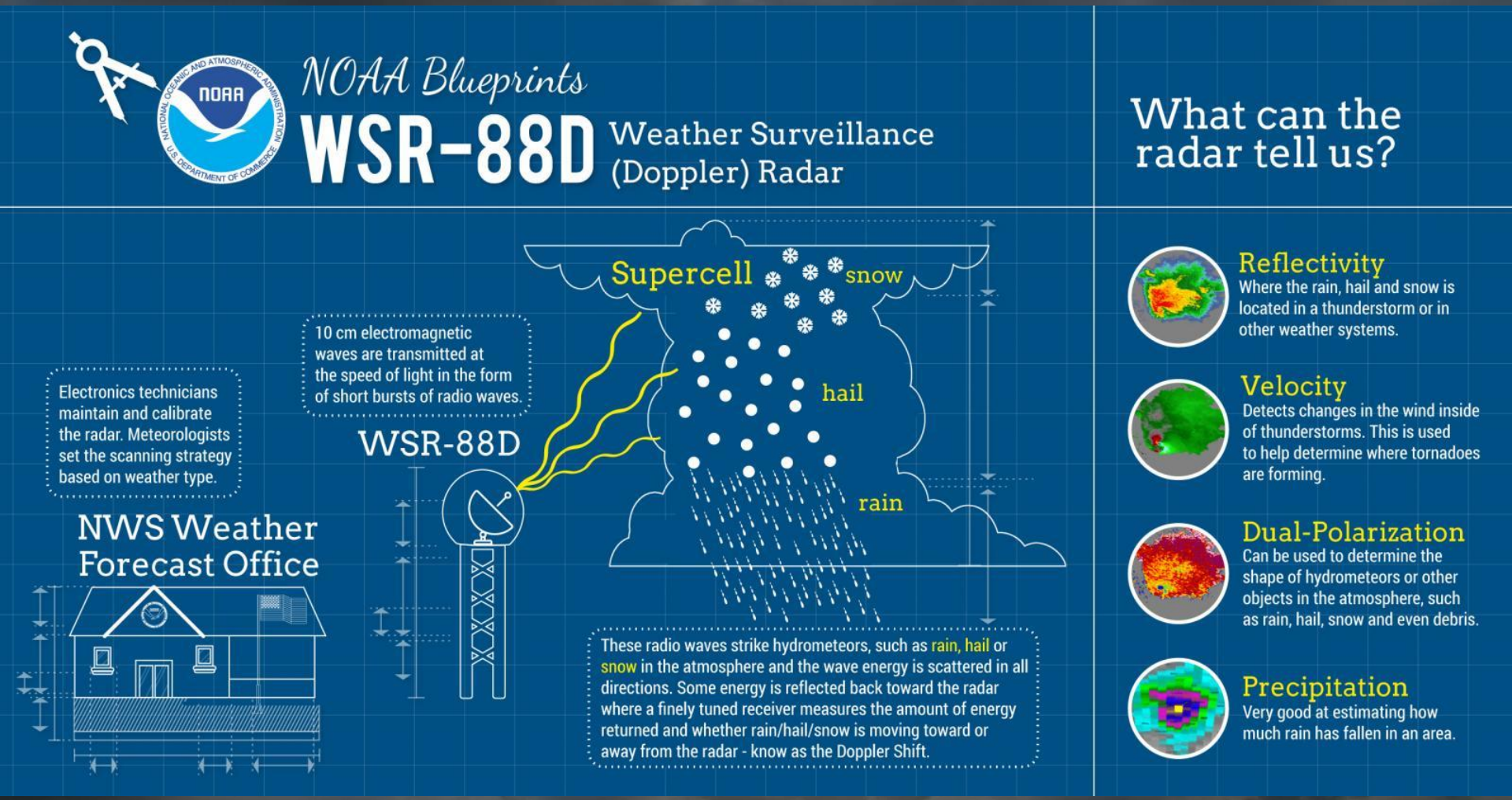
Did You Know?



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Watch VS. Warning

CAUTION

- **Check the forecast often**
- **Monitor the skies**
- **Know where to take shelter**

DANGER

- **Take shelter immediately!**
- **Seek further information**
- **Monitor the forecast**

Watch- "Be Prepared"

Conditions are favorable for severe weather in or near the watch area. Watches are issued for tornadoes, severe thunderstorms and flash floods.

Warning- "Take Action"

The severe weather event is imminent or occurring in the warned area. Warnings are issued for tornadoes, severe thunderstorms, flash floods and river flooding. Issued by NWS Binghamton for central New York and northeast Pennsylvania.

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